

1 ABSTRACT

2 Method and apparatus are contemplated for receiving from an input, an optical
3 signal in a volume hologram comprising a transfer function that may comprise temporal
4 or spectral information, and spatial transformation information; diffracting the optical
5 signal; and transmitting the diffracted optical signal to an output. A plurality of inputs
6 and outputs may be coupled to the volume hologram. The transformation may be a
7 linear superposition of transforms, with each transform acting on an input signal or on a
8 component of an input signal. Each transform may act to focus one or more input
9 signals to one or more output ports. A volume hologram may be made by various
10 techniques, and from various materials. A transform function may be calculated by
11 simulating the collision of a design input signal with a design output signal.